The *prevailing winds* for February, 1895, viz, those that were recorded most frequently at Weather Bureau stations, are shown in Table I.

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, in connection with the isobars based on the same system of simultaneous observation; the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a wind of average velocity; these figures (or the ratio between them and the total number of observations in this month) indicate the extent to which winds from different directions counterbalanced each other.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Amarillo, Tex	2	52	sw.	Fort Canby, Wash	22	58	s.
Cheyenne, Wyo	22	50	nw.	Do	23	62	se.
Do	23	56	w.	Do	31	50	se.
Chicago, Ill	3	50	ne.	Hatteras, N. C	21	54	n.
Do	4	50	ne.	Huron, S. Dak	21	58	se.
Do	23	50	sw.	Do	22	52	s.
Do	24	50	sw.	Kittyhawk, N. C	8	50	sw.
Dodge City, Kans	30	51	s.	Do	16	52	ne.
El Paso, Tex	15	52	sw.	Do	20	54	n.
Do	29	54	sw.	Do	21	54	n.
Fort Canby, Wash	15	53	se.	Lexington, Ky	8	50	nw.
Do	19	71	se.	New York, N. Y	28	64	nw.
Do	20	56	s.	Tatoosh Island, Wash.	2	50	w.
Do	21	72	s.	Winnemucca, Nev	21	52	sw.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere, as a whole, is very nearly constant from year to year, but the proportion received by the surface of the earth depends largely upon the absorption by the atmosphere, and varies with the distribution of cloudiness. The sunshine is now recorded automatically at 17 regular stations of the Weather Bureau by its photographic, and at 27 by its thermal effects. The results are given in Table XI for each hour of local, not seventy-fifth meridian, time. The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement or clear sky is given in the last column of Table XI.

COMPARISON OF SUNSHINE AND CLEAR SKY.

The sunshine registers give the *duration* of direct sunshine whence the percentage of possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. It should not be assumed that these numbers should agree, and for comparative purposes they have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentages of duration of sunshine is almost always larger than the observer's personal estimates of percentages of area of clear sky; the average excess for March, 1895, is 7 per cent for photographic records, and 13 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine for March, 1895.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Tucson, Ariz	80	64	16	Key West, Fla	83	65	18
Santa Fe, N. Mex	75	57	18	Marquette, Mich	82	44	38
Denver, Colo	72	59	13	Baltimore, Md	70	53	17
Dodge City, Kans	72	61	11	St. Louis, Mo	69	55	14
Kansas City, Mo	65	54	11	Chicago, Ill	68	60	8
Helena, Mont	61	57	4	Portland, Me	68	42	26
Salt Lake City, Utah*	61	39	22	San Francisco, Cal	68	49	19
San Diego, Cal	59	62	— 3	Atlanta, Ga	65	50	15
Savannah, Ga	58	54	4	Des Moines, Iowa	64	49	15
Bismarck, N. Dak	57	58	— 1	Vicksburg, Miss	63	60	3
Cincinnati, Ohio	57	48	9	Salt Lake City, Utah*	62	39	23
Spokane, Wash	53	35	18	New York, N. Y	62	44	18
Galveston, Tex	52	55	— 3	New Haven, Conn	61	52	9
Eastport, Me	51	37	14	Norfolk, Va	61	55	6
Memphis, Tenn	49	47	2	Washington, D. C	59	50	9
Portland, Oreg.*	46	46	0	Boston, Mass	58	43	15
Cleveland, Ohio	40	44	— 4	Detroit, Mich	58	46	12
				Louisville, Ky	57	46	11
				Philadelphia, Pa	57	46	11
				Rochester, N. Y	57	55	2
				Columbus, Ohio	56	40	16
				Buffalo, N. Y	55	40	15
				New Orleans, La	54	54	0
				Wilmington, N. C	53	53	0
				Little Rock, Ark	52	45	7
				Portland, Oreg.*	48	46	2
				Seattle, Wash	46	35	11

* Records kept by both registers.

ATMOSPHERIC ELECTRICITY.

The statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole country were most numerous were: 8th, 60; 12th, 63; 13th, 59; 14th, 65; 25th, 147; 30th, 109; 31st, 97. Thunderstorms were most numerous in Ohio, Missouri, Mississippi, South Carolina, Alabama, Georgia, Louisiana, Pennsylvania, Florida, and Texas. Thunderstorm days were most frequent in Ohio, where they numbered 16; Arkansas, 13; Alabama, Mississippi, and South Carolina, 12; North Carolina and Tennessee, 11. *Severe thunderstorms* are especially mentioned under "Local Storms."

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 6th to the 14th, inclusive. On the remaining twenty-two days of this month 241 reports were received, or an average of about 11 per day. The dates on which the reported number especially exceeded this average were: 13th, 17; 14th, 36; 16th, 59; 22d, 16.

Auroras were reported by a large percentage of observers in Maine, Minnesota, New Hampshire, New York, North Dakota, South Dakota, and Wisconsin.

Auroras were most frequent in: Wisconsin, on eighteen days; Minnesota, on fourteen days; North Dakota, on ten days.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

Thunderstorms were reported at Port Stanley, 24th, 25th, and 31st, and at Medicine Hat, 28th.

Auroras were reported as follows: 1st, Winnipeg, Minnedosa, and Prince Albert. 3d, White River, Winnipeg, and Minnedosa. 11th, Prince Albert. 12th, Minnedosa and Prince Albert. 13th, Quebec, Minnedosa, and Medicine Hat. 14th, St. Andrews, Father Point, Quebec, Kingston, Rockliffe, Port Stanley, Winnipeg, Minnedosa, Qu'Appelle, Medicine Hat, and Prince Albert. 15th, Father Point, Quebec, Rockliffe, Winnipeg, and Minnedosa. 16th, Father Point, Quebec, Rockliffe, Kingston, Port Arthur, Winnipeg, Minnedosa, Qu'Appelle, Medicine Hat, and Prince Albert. 17th, Father Point, White River, Port Arthur, and Medicine Hat. 18th, Kingston, Winnipeg, and Minnedosa. 20th, St. Andrews, Father Point, and Quebec. 21st, White River. 22d, Grand Manan, St. Andrews, Father Point, Montreal, Kingston, and Minnedosa. 23d, Father Point and White River. 24th, Father Point, Winnipeg, and Minnedosa. 25th, White River and Minnedosa. 26th, Winnipeg and Minnedosa. 28th, White River. 29th. Quebec and Medicine Hat. 30th, St. Andrews, Quebec, and Medicine Hat. 31st, Winnipeg and Battleford.

METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For general remarks relative to this subject see page 7 of the REVIEW for January, 1895.

The comparison of the air temperature with magnetic horizontal force is shown in detail on Chart V, and the special features of the March curves are as follows:

SPECIAL FEATURES OF THE MARCH CURVES.

The temperatures and also the magnetic force observations need no correction for slope; the amplitudes are not modified; the reduction to a zero datum line for temperatures is +2 and for the horizontal magnetic force is —2. The new magnetic solar period begins March 11.80. If the more accurate period, 26.67928, is used instead of 26.68 days, for which the published ephemeris was constructed, the correction from the latter to the former for the year 1895 is 0.08 day.

Unfortunately for the purposes of this comparison the magnetic observatory at San Antonio suspended its operations about the first of March. We can therefore utilize only the readings of the instruments at Toronto and Washington.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers during the current month are given in Table VII. The only river that was above the danger line was the Tennessee, at Johnsonville, on the 23d. The following rivers rose to nearly that point: the Ohio, at Evapsville, 23d; the Congaree, at Columbia, 16th, and the Savannah, at Augusta, 17th.

The *thickness of ice* in rivers and harbors is given in the weekly bulletin of "Snow on the Ground" during the winter months. On Monday, March 25, the Missouri river was open for some distance above Pierre, but above that there was reported 26 inches of ice at Bismarck and 33 inches at Williston. The Ohio was just clearing out at Pittsburg. At the Lake stations the reports showed 24 inches in the harbor and 12 in the lake at Duluth; none at Marquette; 22 at Sault Ste. Marie, and no fast ice at Milwaukee and Grand Haven; Alpena, 0.5; Port Huron, 5.0; Detroit, 6; Erie, 3; Rochester, 14; Oswego, 16.5.

STATE WEATHER SERVICES.

The following extracts are taken from the reviews published by the services of the respective States; occasional notes in brackets are added by the Editor:

Alabama.—Up to the 20th the month was cold and generally unfavorable; severe local windstorms occurred in different parts of the State on the 7th and again on the 20th; the heavy rains of the middle of the month caused very high rivers, amounting almost to floods in some places. The last ten days were generally warm and pleasant and favorable to all farm work, which has been pushed very rapidly. Rainfall was 1.83 more than the normal for the month.

Arizona.—The monthly mean temperature was 1.5° above normal; the precipitation was 1 inch below normal; the average weather was 18 clear days, 8 partly cloudy, 5 cloudy, and 1 rainy.

Arkansas.—The mean temperature for the month was 0.6° above the normal. For the first two decades the temperature was generally below the normal; after the 21st it was above the normal to the end of the month. The highest temperature ever recorded in the State in March occured at Keesees Ferry, Marion County, on the 28th, when the maximum thermometer registered 91°. The average precipitation for the State was 0.41 inch above the normal. There was no snowfall during the month, except traces at Corning, Fayetteville, and Keesees Ferry.

California.—The month was deficient in both temperature and rainfall. The severe frosts of 14th, 15th, 29th, and 30th did considerable damage to the almonds, the early cherries, and especially to the apricots, which will considerably decrease the yield. Several fine orchards that had escaped the frost of the 14th and 15th were nearly destroyed by the frost of the 29th. All other fruits will be abundant. The grain prospects continue good in all quarters of the State where raised. The abnormal weather of February had advanced the growth of fruits at least ten days earlier than usual, which was the cause of the damage done by this month's frosts.

Colorado.—The monthly mean temperature was 1°, and the average daily temperature from 5° to 7° below the normal for March. Precipitation was most general from 13th to the 15th, and on the 29th, 30th, and 31st. It was above the average in the north-central section and on the Divide, while in the San Luis Valley there was little or none, and a deficiency was also reported from the extreme eastern and southern countries and the western slope.

Connecticut.—(See *New England.*)

Delaware.—(See *Maryland.*)

District of Columbia.—(See *Maryland.*)

Florida.—There was no marked departure from normal conditions during the month. A moderate cold wave occurred in the first week, but only two stations reported temperatures below the freezing point and very little damage was done to vegetation. A cool wave in the third week of the month was accompanied by light frosts in some of the northern counties, but no injury resulted except the retarding effect on vegetable growth. The mean precipitation for the month was 0.84 inch below the normal for the State.

Georgia.—The month was marked by no unusual severe storms. The State was visited by several cold waves, the most noticeable of which took effect on the mornings of the 16th and 17th, and on the latter date caused the temperature to fall below or near freezing in the most southerly counties. The average temperature of the month for the State as a whole varied but little from the seasonal normal. The precipitation was less than a half inch below the normal.